State of Readiness: Public Safety Interoperability in Massachusetts

Analysis and Recommendations Regarding Public Safety Interoperability in the Commonwealth of Massachusetts

EXECUTIVE SUMMARY

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Massachusetts Executive Office of Public Safety
Mitt Romney, Governor
Kerry Healey, Lieutenant Governor
Edward A. Flynn, Secretary of Public Safety

Executive Summary

Since the federal government recognized (post September 11, 2001) that communications interoperability is vital to emergency response , federal funding has been made available to state and local agencies to assist in developing interoperability solutions. The Executive Office of Public Safety determined that a strategic plan was necessary to ensure that this funding was not only distributed to those agencies in need, but also that the chosen interoperability solutions are effective and promote interoperability among local, state, and federal agencies.

To this end, the Executive Office of Public Safety (EOPS) developed a web-based survey to help evaluate the current state of interoperability among the Commonwealth's public safety and public service agencies. This survey provided much of the data which will be the basis for the development of a comprehensive interoperability strategy. As a result of the survey data and meetings with groups and individuals identified by the Commonwealth, an action and implementation plan and a realistic cost for achieving an increased level of interoperability was produced.

The EOPS interoperability survey was developed and available for input from July 16, 2003 through August 11, 2003 (although it was available until October 16, 2003 for late filers). One hundred and fifty surveys were completed, representing both public safety and public services agencies. Respondents, in many instances, represented multiple agencies in a specific field of public safety/service.

The survey was based upon questions found in a National Task Force on Interoperability document: "Why Can't We Talk? Interoperability: Working Together To Bridge The Communications Gap To Save Lives. A Guide For Public Officials." This document was modified to meet the Commonwealth's needs, with the addition of questions on radio-specific and operational issues. It consisted of two parts: an Operational Assessment and a Technical Assessment. Since the operational and technical elements of public safety communications are often the responsibility of different persons or operational commands, both parts could be completed independently if desired.

The recurring themes throughout the survey are limited funding, lack of direction at the state level, and the lack of interoperability. Many of these problems result from the independent nature of the Commonwealth's citizens and the past perception that towns required their own radio systems with which to communicate. Since so many towns have independent systems, the assigned frequency bands vary greatly to provide this functionality.

To address these issues, the Executive Office of Public Safety created a Working Group comprised of subject matter experts in related fields to review the responses, conduct interdisciplinary meetings throughout the Commonwealth, and serve as an instrument to assist in guiding local agencies when implementing interoperability solutions. PSComm assisted with data and technical analysis and recommendations. Members of the group are:

Robert C. Haas, Undersecretary of Public Safety –EOPS, Chairman
C. Blair Sutherland, Massachusetts State Police
Chief Gerald Reardon, Cambridge Fire Department
H. David Troup, Boston Police Department
George Fosque, Cambridge Emergency Communications
Brad Prenney, Department of Public Health
Peter Collette, MassHighway
John Tommaney, MEMA

The majority of respondents to the survey (78%) indicated that the need for communications interoperability has increased considerably over the past five years. While interoperability is a priority of most agencies, respondents indicated that the most significant obstacles encountered in achieving a level of interoperability are limited funding (89.1%) and the different frequency bands used by agencies (73.3%).

To address these issues in a timely manner, the group agreed on two courses of action to develop the "blueprint" for interoperability in the Commonwealth:

- The abundance of existing equipment should be used where possible, improving existing networks and replacing those elements that may contribute to failure.
- Connectivity and interoperability must exist among current regional systems throughout the Commonwealth

These elements will permit more effective use of available funding and provide timelier interoperability where it is most needed among regional public safety and public service agencies.

The Commonwealth

The Commonwealth of Massachusetts is approximately 8,257 square miles (of which 7,838 square miles is land area) with a population of 6,349,097. Its topography varies from shoreline on the eastern coast, interspersed relatively flat areas, and rolling hills, mountainous, and forested terrain, as one travels west. The majority of the population resides in the eastern third of the state, and that area is predominately comprised of shoreline and a relatively flat topography. This information is central to determining which part of the frequency spectrum is most advantageous for a specific area. Regional frequency spectrum is also determined by the frequency bands that are predominant in a particular geographic area.

Many of the problems identified during the evaluation of responses from agencies have been the result of the independent nature of the Commonwealth's citizens and the past perception that each town required its own radio systems on which to communicate. Since so many towns have independent systems, the assigned frequency bands vary greatly to provide this functionality.

General Survey Findings

Many regional cooperatives exist in the public safety arena within the Commonwealth. Responses were received from various regional consortiums, coordination groups, and dispatch centers. These groups are listed below with the number of agencies they represent indicated in parentheses:

Metropolitan Law Enforcement Council (38 agencies)
Martha's Vineyard Law Enforcement Council (8 agencies)
Northeastern Massachusetts Law Enforcement Council (38 agencies)
Western Regional Fire Defense, Inc. (80 agencies)
Western Massachusetts Law Enforcement Council (27 agencies)
Greater Boston Police Council (150 agencies)
Metrofire (34 agencies)
Massachusetts Fire District 7 (26 agencies)
EMS Region 1 (57 agencies)
Central Massachusetts EMS Corp. (70 agencies)
Metropolitan Boston EMS Council, EMS Region IV (95 agencies)
Barnstable County Regional Emergency Planning Committee (80 agencies)
Berkshire County Fire Chief's Association (32 agencies)
Essex County Fire Chief's Association (34 agencies)

Plymouth County Control/Fire District 2 Mutual Aid Center (22 agencies)
Massachusetts Fire District 14 (23 agencies)
Massachusetts Department of Public Health Region 2 EMS (70 agencies)
MassHighways (state-wide)
Berkshire County Communications (24 agencies)
Berkshire County Sheriff's Communications Center (50 agencies)
Shelburne Control Dispatch (61 agencies)
Northampton Control (34 agencies)
State Police Middleboro Dispatch (3 agencies)

The support and cooperation of these groups will be essential in establishing a statewide interoperability strategy and implementing the elements required to meet the goals of that strategy.

Cooperation among agencies is key to any successful strategic plan and is evident where participation in training exercises is concerned, as 70% of respondents indicate that they participate in these events with other agencies. Local and state participants are the norm. Federal agency participation is minimal.

Although interagency training and practical exercises seem to be a priority with most agencies, 52.9% of respondents do not believe that their agency's training has prepared them to handle incidents or situations requiring the use of communications interoperability procedures and methods.

The majority of respondents (74) indicate that they share radio infrastructure with other agencies, which may result in multiple agencies experiencing a communications failure due to a single incident. This is significant also because 71 respondents indicate that they do not have a backup communications center, and 25 respondents indicate that their backup center shares infrastructure with the primary center, possibly rendering both centers inoperable.

Many agencies have plans for partial system failures – backup repeaters, backup generators, point-to-point radio communication capability, and the use of alternate channels. During complete system failures many use point-to-point radio communications, backup repeaters (remotely or in-cabinet activated), and communications center-installed mobile radio (point-to-point or via remotely/manually activated repeater).

A number of agencies rely on wireless telephones as a primary or secondary means of communication during complete system failure. This was recently tested during the power outage affecting parts of New York,

Michigan, and Ohio and was found to be unreliable. Six respondents indicate that they do not have the ability to communicate during a complete failure.

Respondents cite the following as difficulties to communicating (the reason is followed by the percentage of respondents):

Not enough channels (70.9%),
Dead spots (89.6%),
Signal fading (73.6%),
Frequency interference (59.3%),
Battery problems (53.8%),
Insufficient equipment (74.1%),
Outdated equipment (73.8%),
Different types of equipment (59.1%),
Topography/terrain (89.6%), and
High-rise buildings (55.8%)

System age is a factor for many agencies – one system is 50 years old, eight are 30 years old, three are 25 years old. 30 respondents have systems that are 20 years of age or less, and 73 respondents have systems that are 10 years of age or less.

Other public safety and services agencies such as the Massachusetts Emergency Management Agency, Department of Fire Services, Massachusetts Port Authority, Massachusetts Environmental Police, Massachusetts Aeronautics Commission, and the Bureau of Alcohol, Tobacco, Firearms, and Explosives, participated in the survey.

It is important to note that although the majority of federal law enforcement agencies were asked to participate in the survey (at any level which they were comfortable with); only one federal agency actually completed and submitted a survey response. A representative from one agency stated that there would be no purpose to filling out the survey since federal communications are separate from state level communications. He also stated that there is rarely any communication between the two and when there is, Nextel radios are used.

Private entities and contracted services providers (such as private ambulance companies and the Red Cross) were not asked to participate at this time, although communications with these entities will be just as important a factor in any future interoperability plan.

Although primarily represented by MassHighways in this survey, the inclusion of public works agencies is extremely important. These agencies provide support to line public safety personnel and are

invaluable when needed. The requirement to communicate on a real-time one-to-one basis with these support personnel is crucial to the successful resolution of any medium to large scale incident.

Political Environment

The Commonwealth, through the Executive Office of Public Safety, has dedicated its efforts to actively seek out sources of funding for the establishment of interoperable communications among public safety agencies. Law enforcement, fire services, and emergency medical services are all committed to working together to reach the same goal, which is recognized as beneficial to all disciplines.

The traditional rivalries among groups and agencies have been set aside in order to accomplish these mutual goals. The regional meetings were all very positive and confirmed that cooperation among agencies and disciplines is not only increasing, but is expected.

Local agencies have also been successful in gaining earmarked funding from Congress to assist in implementing interoperability solutions. This not only opens a new path for continued funding, but illustrates the new perception of public safety and its importance by politicians at the federal level.

Recommendations

The recommendations which follow are those which were developed by members of the Interoperability Working Group. They are listed in order of implementation, realizing that many of the recommendations may be addressed concurrently. It must also be realized that although the goal was to use as much existing infrastructure as possible to make more efficient use of available funding, many of the recommendations will have to be funded. Fortunately the first round of Homeland Security grant funding has been distributed and many of the recommendations are being addressed at some level by many departments.

Recommendation One: *Establish A Formal Interoperability Working Group For Administration Of Interoperability Communications, Engineering, Coordination and Oversight*

Recommendation Two: *Expand The ICALL-ITAC System*

Recommendation Three: *Provide Access To Accurate Information On Operational Readiness And Availability Of Communications Assets.*

Recommendation Four: *Develop A Maintenance, Distribution, And Training Plan For Radio Caches.*

Recommendation Five: *Expand The State Police Radio System*

Recommendation Six: *Enhance The Existing EMS Communications System*

Recommendation Seven: *Enhance Use Of Existing Radio Infrastructure And Other Resources.*

Recommendation Eight: *Implement Regional Portable/Mobile Interoperability Communications Solutions*

Recommendation Nine: *Implement Fixed Regional Interoperability Solutions*

Recommendation Ten: *Develop And Implement An Interoperability Training And Certification Program*

Recommendation Eleven: *Develop And Implement A Narrow Band Frequency Management Plan*

Recommendation Twelve: *Combine Regional Dispatch Operations*

Recommendation Thirteen**:** *Develop And Implement A Data Interoperability Plan*

Recommendation Fourteen: *Establish Backup/Redundant Communications Infrastructure*

Conclusion

The recommendations reflect solutions to problems identified by survey data analysis, regional meetings held to discuss survey results and provide a forum for additional comments and concerns, and discussions with the Executive Office of Public Safety and the Interoperability Working Group.

Cooperation, coordination, oversight, management, engineering, and funding are all necessary elements for continued success. Regional communications user group meetings should be held quarterly to build on the momentum that was established in the regional meetings.

The implementation of the report recommendations provide a blueprint and logical implementation plan for developing interoperability solutions that capitalize on available funding and, more importantly, work when needed.

The blueprint should be a constantly evolving document that is continually monitored and adjusted as the environment and technology change. As Under Secretary Robert Haas, Executive Office of Public Safety, repeatedly stated in the regional meetings, "This is a once-in-a-life-time opportunity to really make an impact for now and the future."